Library Manager: Design Process and Product Retrospective
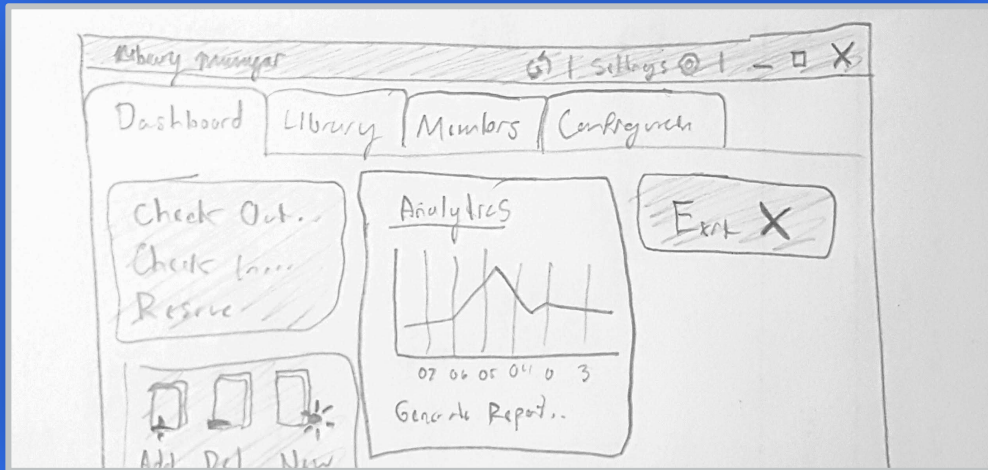
FBLA State Leadership Conference: Coding & Programming
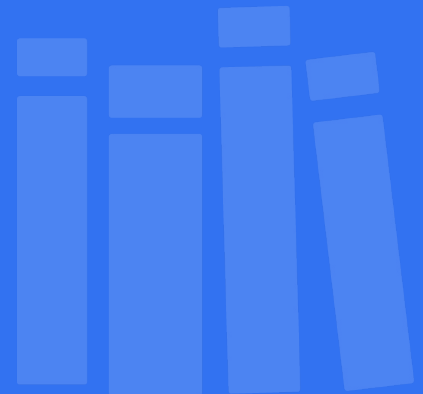
Joseph Azevedo
East Hamilton School

Pre-Production Process
Planning & Outlining
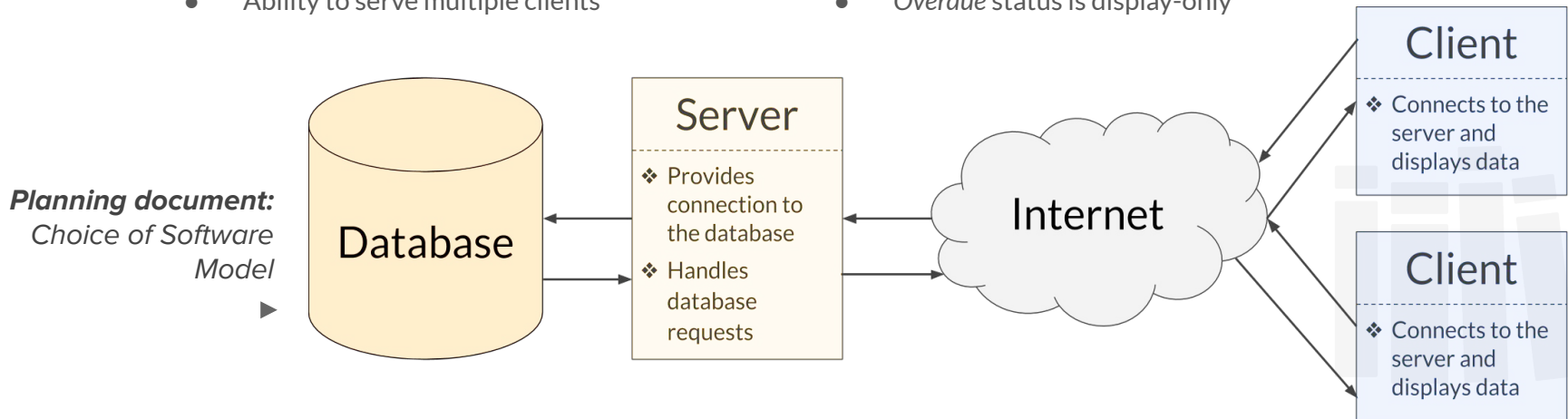
Software Model: Pros & Cons

❖   Software model used: *Client-server model*

❖   **Pros**
  ● Fragmented processing model
  ● Ability to serve multiple clients

❖   **Cons**
  ● Refresh daemon required
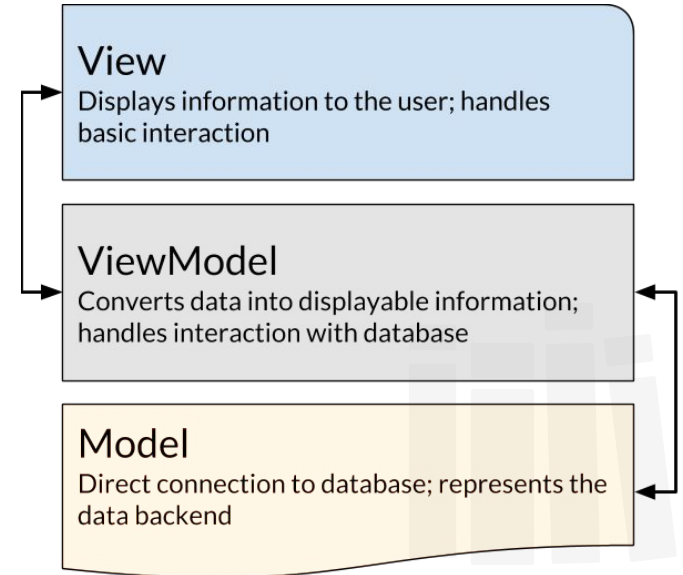 ● *Overdue* status is display-only

Planning document:
Choice of Software
Model
  ▶

Database

Server

❖ Provides connection to the database
❖ Handles database requests

Internet

Client

❖ Connects to the server and displays data

Client

❖ Connects to the server and displays data

Framework Choice: Pros & Cons

❖ Use of **WPF** *(Window Presentation Foundation)* under the Microsoft .NET Framework

- ● **Pros**
  - ■ Separation of *design* and *behavior*: UI design is created XAML; Behavior is coded via C#
  - ■ Supports the **MVVM** design pattern

- ● **Cons**
  - ■ High design overhead for certain patterns
  - ■ **Fragmented code-base:** fusion of design code and behavioral code can lead to conflict

Microsoft®
.NET
Windows Presentation Foundation

View
Displays information to the user; handles basic interaction

ViewModel
Converts data into displayable information; handles interaction with database

Model
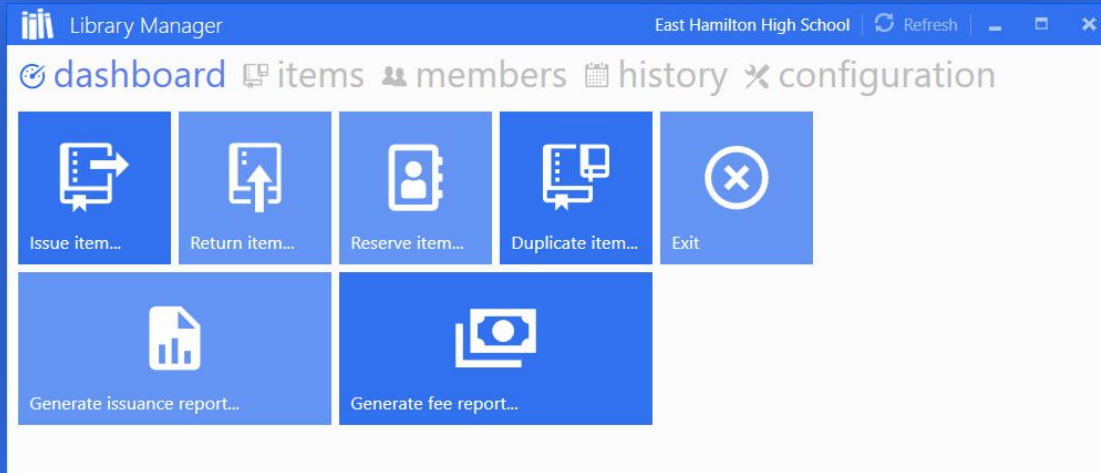Direct connection to database; represents the data backend

Use of **Version Control**

❖ Github.com used
- ● Based off of *git*

❖ Tracks changes
- ● Unwanted edits can be retroactively rolled back

❖ Allows for collaboration
- ● Although not used for collaboration, it is important for the flexibility and longevity of any project
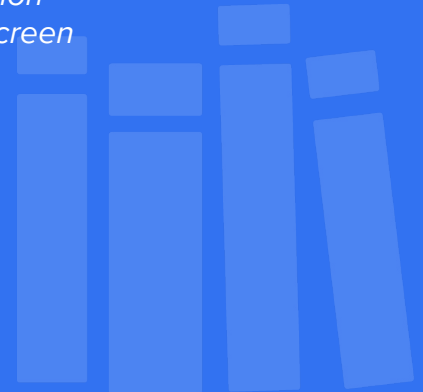
GitHub

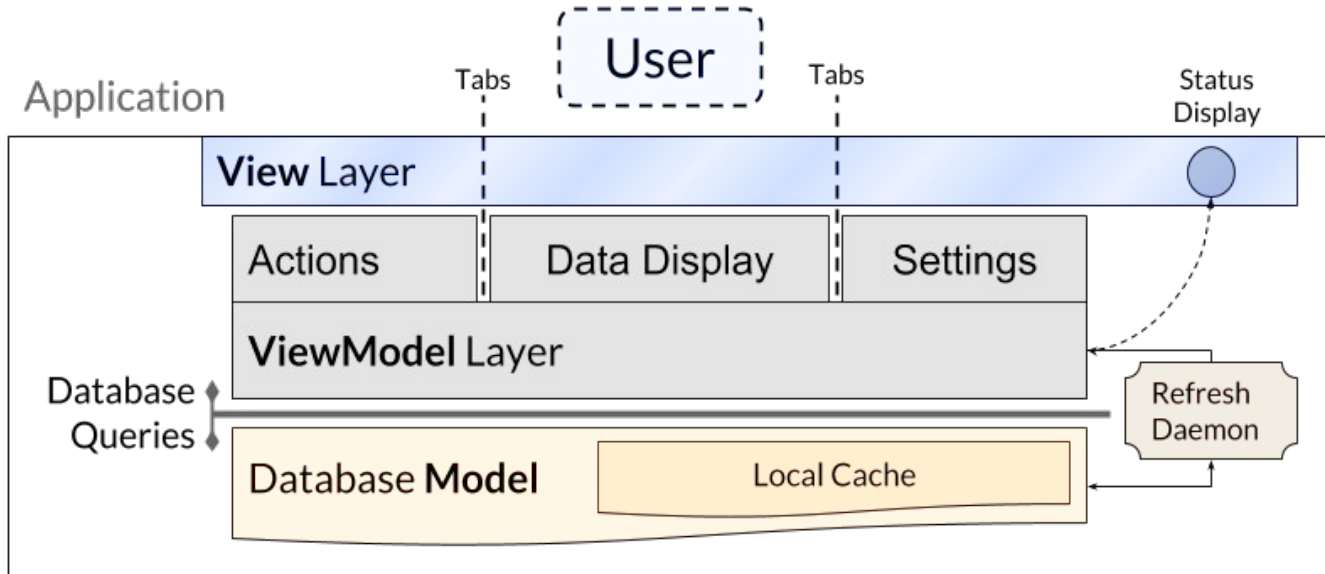# Design Process
Coding & Design Choices

Library Manager   East Hamilton High School | ⟳ Refresh   — ▢ ✕

dashboard 💻 items 👥 members 📅 history 🔧 configuration

Issue item...	Return item...	Reserve item...	Duplicate item...	Exit

Generate issuance report...	Generate fee report...

Program Structure: Layer Diagram

Planning document:
Software Structure

Program Flow: UI Layout

Tabs

Panel A	**Panel B**	Panel C	Panel D

Content

Sample content here

Pages

Content

Sample content here

◀ Back O Next ▶

MDI Children

Content

Sample content here
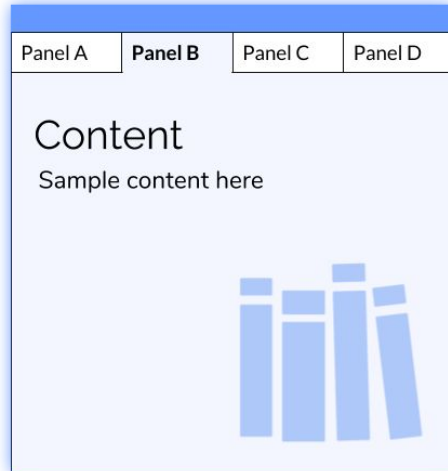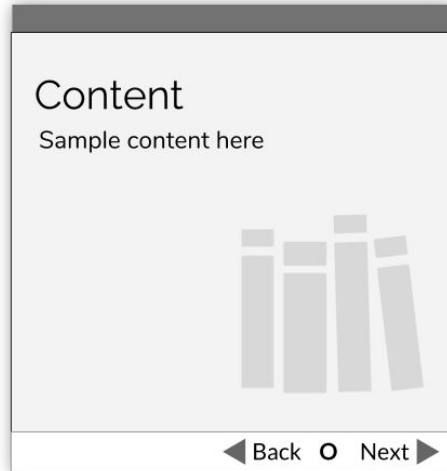
Program Usefulness: Functionality & Placement

❖ Major design choice: **placement of library functions**

  ● I.e. Checking out or returning

❖ Considered multiple options

  ● Ribbon (MS Office-style)

  ● Page-specific

  ● Central dashboard
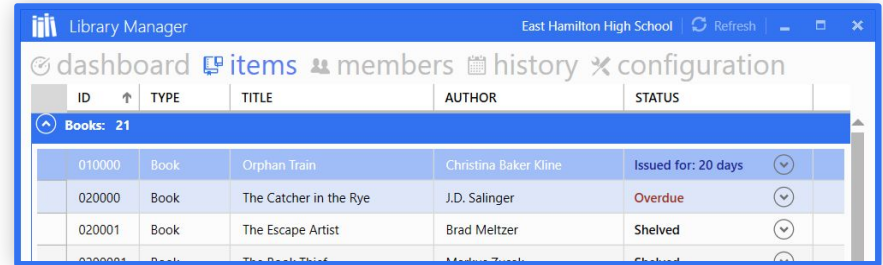
    ■ Assisted in generating reports and outputs
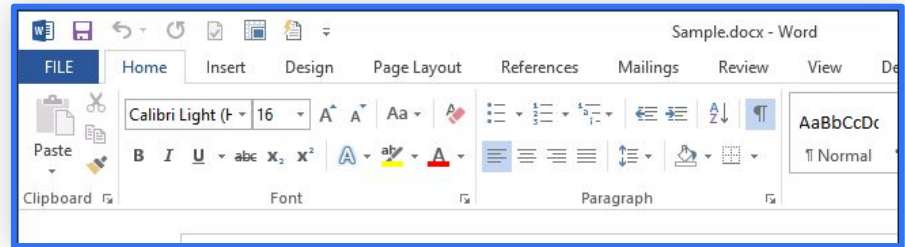
▼ *The Ribbon control as appears in Microsoft Word 2017*

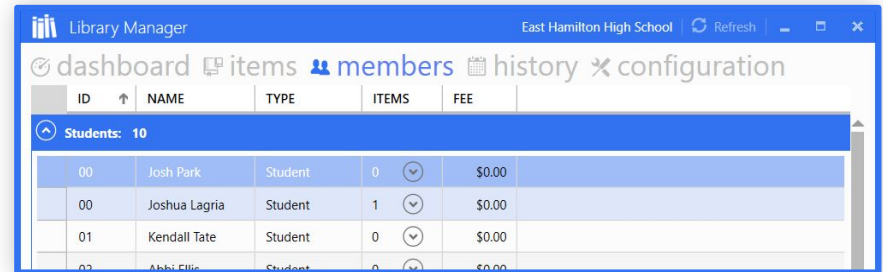# Design Patterns: Abstraction & Generalization

- ❖ Extensive documentation
  - Source code commenting
  - End-user software manual
- ❖ Abstraction
  - Objects & structures abstracted within framework
- ❖ Generalization
  - UI elements can be generalized
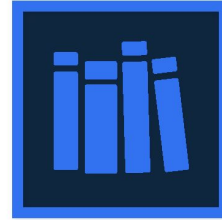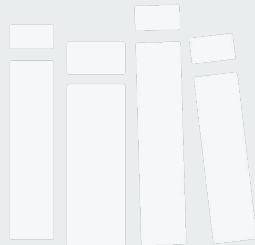
Post-Production Process

Software Manual Creation
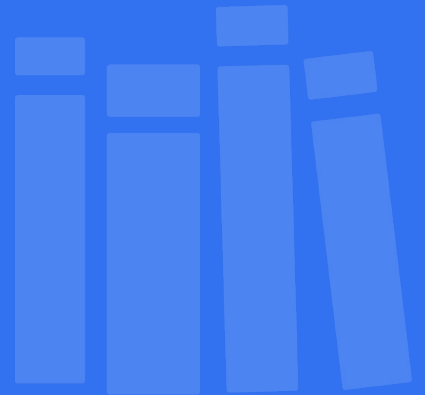
Software Manual Creation

❖ *11 pages* of information on *each* software feature

❖ **Sections**

1. Introduction
2. Organization
3. Dashboard
4. Items
5. Member
6. History
7. Configuration

Library Manager Software Guide
FBLA State Leadership Conference: Coding & Programming

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East Hamilton School

March 11-14, 2018

Contents

4   Adding, Editing, and Deleting Items

On each row, the foll wing operations can be performed to change the items present in the database:

- **Edits**: Each library item row can be edited, first by beginning the edit with a double-left-click (🖰🖰). After typing in the new row or selecting the new option, the edit can be saved by either clicking out (🖰) or by pressing `Enter`.

> ℹ️ When changing the ID of an existing or new row, be sure to enter in a unique value that doesn't exist anywhere else. If a duplicate ID is inputted, the data will be highlighted as invalid and the edit cannot be committed (*See below*).

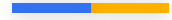| | 020001 | Book | The Escape Artist | Brad Meltzer | Shelved | ⌄ |
| ❗ | 020001 | Book | The Book Thief | Markus Zusak | Shelved | ⌄ |
| | 020001 | Book | | | | |

- **Additions**: By scrolling down to the bottom row of the grid with a plus icon to the left (➕), the addition row can be double-clicked (🖰🖰) to begin editing by normal. Then, when the edits are committed by pressing `Enter`, the new row will be added to the database.

| | 110007 | Movie | Citizen Kane | Orson Welles | Issued for: 21 days | ⌄ |
| | ➕ | | | | | ⌄ |

> ℹ️ If the desire is to duplicate the item with a new ID, it is faster to use the *Duplicate item...* item tile in the *Dashboard* tab, select the item to duplicate, and enter in its new ID.

❖ Discusses pertinent features and use-cases

❖ Provides keyboard shortcuts and controls

❖ Includes visual aids in the form of program screenshots

❖ Contains tips for advanced users that invite them to use the advanced features

Questions?
Panel Interaction